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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 19

Application Number: 08/940,020
Filing Date: September 29, 1997
Appellant(s): FUKUZAWA ET AL.

Walter G. Sutcliff
For Appellant

MAILED
OCT 02 2000
Group 2700

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed September 22, 2000.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 21-23, 26, 47, 48, 60-65, 67-75, 77 and 78 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The Appendix to the brief includes non-elected claims 1-20, 24, 25, 27-46, 49-59, 66 and 76. Claims 21-23, 26, 47, 48, 60-65, 67-75, 77 and 78 are the pending claims and subject to appeal.

(9) Prior Art of Record

5,018,037	Krounbi et al	5-1991
5,733,370	Chen et al	3-1998

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 U.S.C. § 112

Claims 60, 67 and 77 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, "an underlayer having a thickness of 50 nm or less", includes every thickness up to zero. The specification fails to enable a skilled artisan how to make and/or utilize an underlayer having a thickness approaching zero.

Claim Rejections - 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 21-23, 26, 47, 48, 60-65, 67-75, 77 and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krounbi et al (US 5,018,037) in view of Chen et al (US 5,733,370). 70, Krounbi et al shows in figure 3d substrate 21 having a main surface. Magnetoresistive (MR) effect film 27 of Krounbi et al is formed on the main surface of substrate 21 and has a magnetic field detecting portion. The pair of hard bias magnetic filed applying films 26 of Krounbi et al are disposed adjacent to both edge portions of the magnetic detecting portion. In column 2, line 56 through column 3, line 11, Krounbi et al discloses that bias magnetic filed applying films 26 have hard magnetic films containing cobalt (Co) as a structural element considered to have a residual magnetization M_r of 650 emu/cc.

Krounbi et al also shows in figure 3 hard magnetic film 26 containing Co as a structural element and it is considered to have Co(110) crystallographic orientation oriented perpendicular to the surface. Krounbi et al additionally discloses in column 2,

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line 56 through column 3, line 11 that hard magnetic film 26 is composed of CoPt or CoCrPt. Bias magnetic field applying films 26 are shown in figure 3d to be abutted against MR effect film 27.

However, Krounbi et al is silent as to bias magnetic field applying films having hard magnetic films containing cobalt (Co) as a structural element being a bi-crystal structure. Krounbi et al is also silent as to upper and lower shields in a combined or merged head having poles. Krounbi et al is additionally silent as to the a spin valve film and an amorphous underlayer.

Chen et al discloses column 3, lines 37-50 magnetic field applying films having hard magnetic films containing cobalt (Co) as a structural element being a bi-crystal structure, and official notice is taken of the fact that upper and lower shields in a combined or merged head having poles, spin valves and an amorphous underlayer are notoriously old and well known in the magnetic head art.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the cobalt magnetic field applying films having hard magnetic films containing cobalt (Co) as structural element of Krounbi et al with a bi-crystal structure as taught by Chen et al.

The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide magnetic field applying films having hard magnetic films containing cobalt (Co) as a structural element with a bi-crystal structure to suppress Barkhausen noise in the magnetic head. See column 3, lines 37-50 of Chen et al.

It also would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the magnetic read MR head of Krounbi et al with upper and lower shields in a combined or merged head having poles as taught in the art.

The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a magnetic read MR head with upper and lower shields in a combined or merged head having poles so recording can take place, as well as reproducing.

It additionally would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the magnetic head of Krounbi et al with an amorphous underlayer and a spin-valve layer as taught in the art.

The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a magnetic head with an amorphous underlayer and a spin-valve layer so as to provide a magnetic read head able to read a high density on a magnetic recording medium.

(11) Response to Argument

In the second full paragraph on page 6 in section A,

Appellants assert that there is no basis in law or in technical reasoning for the Examiner's assertion of lack of enablement. Appellant did not state a range starting at zero, but rather a recited a thickness less than a finite amount. Appellants respectfully assert that a person having ordinary skill in the art would have no difficulty in understanding the proper scope of the recited claim language or in providing an underlayer as recited in the claims.

There is clear basis in law and in technical reasoning for the lack of enablement of claims 60, 67 and 77. The language in question is "an underlayer having a thickness of 50 nm or less". The basis in law is 35 U.S.C. 112, first paragraph, which requires subject matter in the specification to be described in such a way that a skilled artisan is able to make and/or use the invention. Nowhere, in the specification is "an underlayer having a thickness of 50 nm or less" described in such a way that a skilled artisan is able to make and/or use "an underlayer having a thickness of 50 nm or less".

Furthermore, appellants have taken the liberty to bring to light numerous patents that use the claim language "less than", yet discussion on whether or not the specifications of the 285,518 specifications found by Appellants have support for those claims has not been provided. Nonetheless, the 285,518 patents are not on appeal as is the instant application and the claims and specifications of those patent is moot with respect to the instant application.

With that noted, it is curious as to why appellant has not taken the liberty to discussed the specification of the instant application with respect to "an underlayer having a thickness of 50 nm or less". The appellant has not provided any rebuttal for the record regarding the enablement of the claims *with respect to the instant application*.

Additionally, the terms "or less" or "less than" are not what is being rejected, as suggested by appellants. The rejection is that the specification does not provide support for dimensions recited in the claims. Thereby, rendering a claimed invention that does not enable a skilled artisan to make and/or use that which is recited.

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Contrary to appellants' assertion there is a basis in technical reasoning. The specification fails to enable a skilled artisan how to make and/or utilize an underlayer having a thickness *approaching zero*. The phrase *approaching zero*, which "or less" definitely encompasses, includes dimensions that are extremely small and not quantitatively defined in such a way that a skilled artisan would know how to make an underlayer with a thickness *approaching zero*.

In the paragraph bridging pages 7 and 8 of section B, appellants assert the following:

Reagarding the rejection of the all [sic] of the pending claims as being unpatentable over Krounbi in view of Chen, Appellants not with dismay that the Examiner has failed at any time during the prosecution of this application to address in any meaningful way the substantive arguments made by Appellants regarding the patentability of the claims over this cited prior art. Whether the Examiner agrees or disagrees with the arguments presented, Appellants feel that the dismissal of those arguments without comment substantially precludes the efficient prosecution of the pending application. Appellants have, therefore, brought this appeal before the Board of Patent Appeals and Interferences in hopes of receiving a substantive review of the pending claims and the arguments presented as to the patentability of those claims.

It is regretted that the appellants feel that efficient, compact prosecution was not achieved in the instant application. It is also regretted that appellants feel that "substantive arguments made by Appellants regarding the patentability of the claims" was not addressed "in any meaningful way".

However, those comments are unfounded. Pertinent arguments have been addressed throughout prosecution. A close examination of the record would bear that to be true. Furthermore, if at any time appellants have felt that arguments were not addressed or rejections were unreasonable, appellants are invited to call the Examiner at the phone number listed at the bottom of each and every action just as Michael Eisenberg did October 20, 1999. See paper #12, mailed October 25, 1999.

With respect to claim 21, in the paragraph bridging pages 10 and 11, Appellants assert the following:

the field of endeavor of magnetic storage media is not properly interpreted as the same field of endeavor as magnetoresistive effect devices. Further, there is no proper reason to assert that the magnetic recording medium of Chen is pertinent to the problem of Barkhausen noise in a magnetoresistive head. The problem of Barkhausen noise in a magnetic recording medium is simply not addressed anywhere in the cited prior art. The magnetic storage medium of Chen, therefore, is simply not pertinent to the problem addressed by Appellants.

It is a curious situation as to why appellants make the assertion, supra. On page 2 of the instant Appeal Brief, appellants maintain the following: "Claims 1-20, 24, 25, 27-46, 49-59, 66 and 76 are claims that are currently not elected for prosecution, however, Appellants have traversed the restriction requirements . . ." Non-elected claim 49 recites the following: "A magnetic record medium comprising: . . . a record layer formed on said base film and composed of a hard magnetic **film containing Co as a structural element, the hard magnetic film having a bi-crystal structure.**"

(Emphasis added.) Elected and appealed claim 21 recites the following: "A magnetoresistive effect device, comprising: . . . the bias magnetic field applying films

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having hard magnetic **films containing Co as a structural element and having a bi-crystal structure**". (Emphasis added.)

However, appellants assert, *supra*, "there is no proper reason to assert that the magnetic recording medium of Chen is pertinent to the problem of Barkhausen noise in a magnetoresistive head. As supported by appellants, the fact that Chen discloses a medium does not preclude the utilization of **a film** in a different, yet related device. Noise, as disclosed by Chen, is a concern in recording mediums and it is a concern in magnetic heads, as well.

In the second paragraph on page 10, Appellants also the following:

At the very least Appellants again request that the Examiner provide any evidence at all that the medium noise discussed by Chen is related in any way to the Barkhausen noise cited by the Examiner as providing the motivation to combine the cited references. Appellants respectfully assert that based on the evidence currently provided there is absolutely no relationship between the two disparate effects other than the word "noise" being used as part of the term describing the two effects. Such a tenuous grammatical link provides neither sufficient technical basis nor sufficient motivation to sustain the pending rejection.

The link between noise in a head and a medium is not "a tenuous grammatical link" as purported by appellants. This link is evidence by appellant's instant application. This link is also evidence by the reference to Chen, which states in column 3, lines 37-50 that "noise attributed to the formation of a magnetic alloy layer exhibiting a bicrystal cluster" is "dramatically reduced". And this link is additionally evidenced by the 1988 attached Magnetic Recording Handbook, which demonstrates the purview of *one of ordinary skill in the art*. The Handbook states on page 360 in section 5.2 that "There are three principal contributors to the noise power of a recording channel: The electronic noise, the reproduce-head noise, and the recording medium noise." The Handbook

further states in the third full paragraph on page 364 that Barkhausen noise or "Rubbing noise is, however, reduced when polycrystalline materials are used . . ."

With respect to claim 22, on page 11, appellant maintains the following:

The Examiner assert at page 3 of the Office Action that the hard magnetic film of Krounbi "is considered to have Co(110) crystallographic orientation oriented perpendicular to the surface." With all due respect to the Examiner's "considered" opinion, such an opinion is entirely irrelevant.

The rejection under 35 U.S.C. § 103 on page 3 of the Office Action mailed February 29, 2000 is not the examiner's opinion. It is an obvious rejection based on United States Patent 5,018,037 to Krounbi et al; United States Patent 5,733,370; that which would have been obvious to a person having ordinary skill in the art at the time the invention was made and what the relevant art suggests. Furthermore, appellants have not taken the liberty to point out exactly what precludes the Cobalt (Co) referenced in the above rejection from having a Co(110) crystallographic orientation oriented perpendicular to the surface, and it is unclear as to whether appellant is suggesting that the material Co(110) is a newly discovered material.

With respect to claim 60, appellants assert in the penultimate line and the ultimate line the follow: "The rejection, in fact, fails to cite the prior art as even teaching the amorphous underlayer itself let alone the purported motivation to combine". As stated in the rejection supra, "official notice is taken of the fact that . . . an amorphous under layer [is] notoriously old and well known in the magnetic head art." This official notice has not been challenged throughout prosecution. Therefore, it is unclear as to why appellant is asserting that the prior art was not cited to support the teaching and rationale of an amorphous underlayer in a magnetic head.

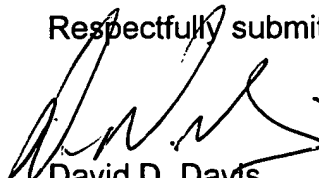
With respect claim 62, appellant asserts on page 13 the following:

The Examiner states at page 3 of the Office Action that the hard magnetic film of Krounbi is "considered to have a residual magnetization Mr of 650 emu/cc" It is unclear to Appellants what relevance the Examiner's considered opinion is purported to have to the prosecution of this application.

Again, the rejection under 35 U.S.C. § 103 on page 3 of the Office Action mailed February 29, 2000 is not the examiner's opinion. It is an obvious rejection based on United States Patent 5,018,037 to Krounbi et al; United States Patent 5,733,370; that which would have been obvious to a person having ordinary skill in the art at the time the invention was made and what the relevant art suggests. Furthermore, appellants have not taken the liberty to point out exactly what precludes the hard magnetic film of Krounbi et al having a residual magnetization Mr of 650 emu/cc.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,



David D. Davis
Primary Examiner
Art Unit 2754

ddd
October 1, 2000

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